

THE DETERMINANTS OF GROWTH IN THE NIGERIAN INDUSTRIAL SECTOR (1986 – 2016).

OBADONI, Juliana

Department of Mathematics and Computer Science
Benson Idahosa University, Benin City
E-mail: jataha@biu.edu.ng

OISAMOJE, Michael Dada

Department of Business Administration
Benson Idahosa University, Benin City.
E-mail: moisamojie@biu.edu.ng

ADEDOYIN, Samuel Adeyemi

Department of Business Administration
Benson Idahosa University, Benin City.
E-mail: sadedoyin@biu.edu.ng

ABSTRACT

The determinants of industrial sector growth in the Nigerian economy was examined in this research. The consistent yearly decline in the nation's GDP especially in the 2016 annual report prompted this study. Focus was from 1986 - 2016. Using the Augmented Dickey Fuller technique, the unit root property and the relationships between the variables in the long run were tested. Ordinary Least Square (OLS) multiple regression model was adopted to determine the relationship between these determinants and the growth of the industrial sector for a period of thirty (30) years. The findings revealed an overall significant relationship between the growth of the industrial sector and the determinants during the period under study. Three determinants of growth in the industrial sector were studied. The study recommends the government should ensure a stable and enabling environment for industrial and production activities in the country. A strong policy and effective harmonization of the monetary policy on exchange rate which could also stabilize the interest rate in the economy should be maintained. The government should also harness the vast natural resources available nationwide to promote growth of the local industries e.g the lime stone in Okpella, Edo State and the coal in Enugu etc. The adoption of export promotion strategy as emphasized by SAP in 1986 should also be sustained.

Key Words: Determinants of Growth, Industrial sector, Nigeria

INTRODUCTION

The economy of every country is made up of sectors whose composition and improvement contribute by and large to the growth and development of the nation. Put differently, economic growth of any economy cannot be apparent without the function of these sectors, since they constitute the economy. Nigeria as a nation is well bestowed with an abundance of natural and human resources capable of bringing about sustained growth and development.

Nigeria's GDP and government revenues derive from the various aspects of its economic life. Hence the performance of these sectors significantly determine the growth and development of the economy. Lankauskiene and Tvaronaviciene, (2015) posit that economic development is a process whereby human, financial, organizational, and physical and natural resources are mobilized and aimed at promoting quality living standards for the citizenry. Nigerian economy has been characterized by fits and starts since it was deregulated in 1986 and the

plan of speedy development has not been realized. There has been no sustained growth and the poverty level in the country has been on the rise (Uwakaeme, 2015). This is as a result of the dwindling nature of the output of the economic sectors. The beginning of economic deregulation and the lingering period of liberalization which aimed at restructuring and diversifying the economy targeted at reducing the dependency on oil. The deregulation and liberalization also geared towards achieving stability and reducing the shortfall in the balance of payment and to encourage competition and efficiency through dependence on market forces (Oluchukwu, 2013). When Nigeria shifted from agricultural production in late 1960s to oil and gas, several policies and strategies were adopted and implemented so as to promote national development. Some of these policies are the Import Substitution Strategy (ISI) in the 60s, the season of favorable worldwide price shocks (1973 - 1980), the time of the global oil glut (1980-1985), the era of the Structural Adjustment Program (SAP) with the Export Promotion Strategy (EPI). There is also the oil price revenues that were born out of the Gulf War (1986-1990) and the relatively more recent happenings in these present years of democratic governance (1999 - date) marking the introduction of Foreign Private Investment Led Industrialization Strategy (FPIIS) and the season of the financial crisis globally in 2008 to the fall of oil prices (Otalú and Anderu, 2015; and Ekpo, 2014). Despite these policies to improve sectoral performance, the country was still ill-prepared for the recent economic state and the nature of output growth in the sectors have not been even and still appeared to be far below expectation. The constitution of the economy still remains heavily import reliant and hugely of a consumption culture.

The revenues from the oil sector generates about 95 per cent of exports combined with government earnings while pathetically the industrial sector accounts for a pitiable about 1 percent of the total exports (Economic Recovery and Growth Plan

2017-2020). Most citizens currently live below the poverty level and unemployment level is on the increase. General economic performance has not improved due to deplorable infrastructure, fraud and looting of public funds. Many years of high oil prices brought “seeming growth” but the absence of real investments coupled with high level consumption led to an economy now bedeviled by huge unemployment and many woes. After many years of surviving on oil, the decrease in crude oil prices in the mid - 2014, failure to diversify the economy etc. brought a downturn in 2016 (CIA, World Facts, 2017). The challenges witnessed in the oil sector, including pipeline vandalism in the Niger Delta and oil bunkering adversely impacted government resources and export income, including the financial capacity to check the economy's GDP from contracting. There had been a consistent yearly decline in the nation's GDP as low as -1.51% in the NBS (2016) annual report hence the need to examine and evaluate the factors that determine growth in the industrial sector of the economy within the period 1986 - 2016. In the light of the above, this study attempts to examine the nature of the relationship subsisting between the GDP and growth in the industrial sector; to ascertain the nature of the relationship that exists between exchange rate and growth in the industrial sector and to evaluate the nature of the relationship that exists between inflation rate and growth in the industrial sector within the period under study.

For the purpose of this study, the industrial sector will be analyzed together with the determinants of growth in this sector and their relationship on the sector's growth for a period of 30 years that is from 1986-2016. This period is chosen because the economy was deregulated in 1986 and became open to several forces beyond its immediate control. These forces have been playing on the performance of the sectors in one way or the other. This study is important for the Nigerian government as it tries to shape the economy, for developing countries, researchers, and a number of other stakeholders such as the investors, policy makers and the general public. It would further

help to inform the public and bring awareness of what causes variability in the outcome of the various sectors of the economy.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The Nigerian Economy

The Nigerian economy is an average income, mixed economic system of governance with a growing market and with well-developed communications, transportation financial, legal and entertainment sectors (World Facts, 2011). Presently, the country is placed 127th in the World Economic Forum Competitive Index out of 140 economies globally by WEF in terms of GDP (PPP). Its manufacturing sector is currently underperforming but was next to the largest in Africa, manufacturing a huge proportion of goods and services for West Africa. In 2016, the economy slipped into recession arising from an adverse economic shock and uncertainty including the decline in oil prices, decline in oil production, power shortages, inconsistent economic policies, corruption, unrests and upheavals in the Niger Delta, insecurity problems the Northeast and recently the Fulani herdsmen menace. Nigeria has been hindered by years of mismanagement and the economy has continued been confronted with macroeconomic difficulties with a GDP growth of -1.51% in 2016 with a slight recovery 2017. Although the Nigerian decaying infrastructures and a poor regulatory environment and insecurity have hindered persons and companies of other nations from coming into the country for investment purposes, organizations with a long range strategic investment and joint ventures plans, would find great prospects for profitability in the nations populous market. Khondoker (2007) in his study found out that nations with greater GDP and high GDP rates of growth are those that sustain friendly business environment, have high level standard infrastructural facilities and can successfully attract FDI. In the executive summary presented in the Economic Recovery & Growth Plan 2017-

2020, it was noted that Nigeria had the potential to rise as a key participant in the world economy on the strength of its human and natural resource bestowals. These potentials however are yet to be fully harnessed over time.

With the democratic governance in the last two decades, plans for economic recovery have been specified such as “to leveraging the ingenuity and resilience of the Nigerian people which is the nation's most priceless assets. It is also articulated with the understanding that the role of government in the 21st century must evolve from that of being an omnibus provider of citizens' needs into a force for eliminating the bottlenecks that impede innovation and market based solutions. The Plan also recognized the need to leverage Science, Technology and Innovation (STI) and build a knowledge-based economy. The ERGP is also consistent with the aspirations of the Sustainable Development Goals (SDGs) given that the initiatives addressed its three dimensions of economic, social and environmental sustainability issues. Despite all these policies across the several years of governance in the nation's history, the input of the different sectors of the economy to economic growth of the country is still significantly less than what was expected. For instance, the contribution of the economic sector in the Nigeria's GDP came as low as an appalling - 1.51% in 2016 (CBN statistical bulletin, 2016).

Analysis of Sectorial contributions to the Economy.

The Central Bank of Nigeria (CBN) and National Bureau of Statistics (NBS) annual reports affirm that there are three major sectors of the GDP; Agricultural sector, Industrial sector and Services sector. The emphasis in this study is on the Industrial sector which forms the focus for this study.

The Industrial Sector

This sector is considered the most crucial in any economy, as it indicates the level of independence, self-reliance, technological advancement and ranking among the nations of the world whether as a developed, underdeveloped or a developing

economy. In Nigeria just as in several other developing nations, the word industry is used essentially as a synonym for manufacturing which is actually a sub - sector of the industrial sector. It involves the translation of natural resources into finished produce or intermediary or producer goods. This is because manufacturing is the most dynamic component of the industrial sector (Obioma et al, 2015); and is made up of about thirteen sub component areas of activities (NBS, 2016). From 4.8 percent at independence in 1960, the manufacturing sector's contribution to GDP grew to 7.4 percent in the mid '70s. It declined to 5.4 percent in the early 80s, but again grew to a record high of 10.7 percent in 1985. By 1990, its contribution to the GDP stood at 8.1 percent but later reduced to 7.9 percent in 1992. The gross domestic product (GDP) share continued to decline due to increased revenues from the oil sector. According to the annual report by NBS (2016), in 2016, the manufacturing sector diminished by 4.32 percent compared to its decline of 1.46 percent recorded in 2015. This is a reflection of numerous challenges it faced in 2016, such as elevated costs of imports caused by high exchange rate and higher cost of power occasioned by epileptic power supply due to a fall in electricity generation, and increase in premium motor spirit or fuel. The industries contributed a total of 22.02 percent to the GDP in 2016. Over the years, successive governments have made several attempts to promote the improvement of the industrial sector in the country. Several policies such as the import substitution strategy, the export promotion strategy, the indigenization decree, the structural adjustment program, the foreign-private investment strategy etc been formulated and executed all to make Nigeria an industrialized nation. Government has also invested immensely in the industrial sector by establishing several projects like the Ajaokuta steel company, the steel rolling mills established in the three geopolitical zones in Kaduna, Oshogbo and Warri; Aluminum smelter plant at Akwa Ibom state at Ikot Abasi, Port Harcourt has a refinery and petrochemical

and fertilizer factories. The establishment of cement manufacturing industries at Okpella in Edo State, Calabar and Nkalagu were some of the steps of government to make the nation industrialized and to provide the foundation necessary for the growth of this sector of the nation.

Meaning of Growth

Growth when used in an organic context means physical changes in living organisms. It refers to an increase, expansion, or change over time while economic growth describes a state of an increase in the level of national income. It could be seen as increase in the living average of the citizens of a country and is related with a continuous and steady rise from a small income into a modern and a high revenue economy. The higher the growth of the income level, the higher the living conditions for residents of that nation (Palmer, 2012). The Gross Domestic Product which is the monetary value of goods and services produced within an economy at a particular time irrespective of the origin of the people as long as they are live in that country is employed to measure it. The rise in the GDP is as a result of an increase in the productive capacity of that nation. There exist three major sectors of the GDP (agricultural, industrial and the services sector) contributing to the economy of Nigeria (NBS, 2016) and the performance of these sectors determines the rate of economic growth in the nation.

Theoretical Framework

The theoretical framework for understanding growth could be hinged on various theories which explain the possible sources of growth. **The present study will be focusing on the exogenous growth** model which believes that economic growth is a function of external forces outside the economy. This model sees economic prosperity as largely caused by external rather than internal factors.

The Solow Growth Model

The Solow model of growth also referred to as neoclassical model of growth forms the theoretical

framework for this study. It is an exogenous growth model and submits that growth reflects the technical progress made with key inputs such as labour and capital. The neoclassical model presents that in the process of growth, it is necessary to save in the quest to raise capital stock, capital accumulation had limits to ensure diminishing marginal returns, and capital per unit of labour was limited (Uwakaeme, 2015). It holds that growth would hinge on the population rate of growth and that the rate of growth amongst countries would converge to a steady state in the long-run (Essien and Bawa, 2007). The Solow growth model consists of variables of interest that can be measured. It also consists of relationships that show how humans making economic decisions decide what to do, under opportunities and opportunity costs which gives rise to these values of the variables. The Solow growth model also consists of equilibrium conditions which indicates a position of balance in the economy, shows when variables of interest have stability and the patterns of changes.

Empirical Studies on Determinants of Sectoral growth

There are studies that have been done on the growth of economic sectors and its interrelationships with other macroeconomic variables such as the causative factors of growth and their effect on economic development of different sectors in nations. This implies that if the sectors are stable, viable and productive, the economy will be stable, viable and hence experience growth. Otherwise, the reverse will be the case. Bloom et al. (2014), developed a structural model wherein a temporary rise in uncertainty reduces collective output. Sangyup, Davide, Yi, and Prakash (2017), studied the effect uncertainty would have on productivity by trying to see avenues through which it could affect productivity and growth. They discovered that the effect was greater in times of recessions. In some literature it was assumed that high variability of output was more an outcome of depressed

economy rather than causing it because periods of recession were likely times where investors were slow to act businesswise which might slow down growth. Bachmann and Moscarini (2011), observed that recessions were times of heightened uncertainty and rapid changes at the micro unit of analysis. Fostel and Geanakoplos (2012), gave a hypothetical justification in which bad news increased volatility. Aghion et al. (2010), examined the nature of the relationship between volatility and economic growth. Not much work has been done on the determinants of sectoral output and economic growth. Scholars like Ogun (2004), focused on the manufacturing sector which is a sub-sector under the industrial sector. Sola *et al.* (2013), conducted a research to assess the manufacturing sector's output in Nigeria using the Solow model of growth through ordinary least square methods. Their findings showed that key factors that determine growth in the manufacturing sector were variables such as exports, extent of capacity utilization, imports and investment. They however suggested that the Nigerian government should make available incentives which would enable firms to export more. Olatu and Anderu (2015), however examined the industrial sector comprehensively with all its sub-sectors. The determining factors of industrial sector growth in Nigeria were assessed and they discovered that exchange rate, education, inflation rate, capacity utilization, capital, labour, trade openness and electricity generation were major factors of industrial growth in Nigeria. Unlike Ogun (2004), that proxied industrial output growth with manufacturing sector growth only, Aroriode and Ogunbadejo (2014), assessed the impact of macroeconomic policy on agricultural growth in Nigeria. According to Sola *et al.* (2013), the policies that government put in place to grow the economy could influence different aspects of an economy through numerous avenues like satisfactory capacity utilization, suitable exchange rate, trade policies for export and import and a well-developed political and legal systems and so on though it is controversial as to which policies

were more appropriate for growth. This study is based on assessing the macroeconomic determinants of growth viz-a-viz variability in output of Industrial sector in Nigeria. Macroeconomic variables and economics policies have always been seen as possible determinants of economic performance since they have the potentials to cause economic growth. The macroeconomic focus describes the study of a nation's overall economic performance. And the macroeconomic variables are very crucial though they are not the only cause of economic growth (Fischer, 1993). However, through a reduction of uncertainty in these variables, a stable macroeconomic environment may result to growth. Factors that trigger growth or fluctuations in economic sectors performance have been discussed in a variety of literature. Here the study shall look at the major determinants or 'drivers' of sectoral growth that is the value added to the GDP of the economy. Sectoral performance is driven by different elements from various sources though there is no much, exhaustive literature explaining the role of these elements in an incorporated economic model. However, some appear in different economic literature. For instance, (Peneder, 2009), identified six groups of common factors such as macroeconomic situation, factors of demand, production input materials, research and development, extent of innovation, structure of the market, and openness and barriers to trade. Singh and Kaur (2014), did an empirical study on the service sector and its determinants in India and opines that per-capita GNP, domestic investment, openness and FDI are possible factors of growth. Ajmair and Hussain (2017), did a related study to assess the contributors to the Industrial sector growth in Pakistan and identified the following variables as potential components; external debt stocks, FDI, Trade, GDP growth, gross national expenditure, inflation, consumer prices, manufactures exports and personal remittances. Ajide, (2014) who investigated the determining factors of economic growth in Nigeria; suggested that the government should make effort to curb

unfettered liberalization, aim at promoting of the factors of economic freedom index through cutting down too much government involvement while increased provisions should be made in the budget to be invested in the health and educational sectors as there is possibility of increasing the human life span by these activities.

METHODS

This research used an ex - post facto design as the data already exists (Agbonifoh and Yomere, 1999). The choice for this design is because on the nature of the data used being secondary data. The target for this study is the industrial sector which is considered as a major sector that determines the position of any nation among the industrialized nations of the world. The data used in this study is from secondary sources and were collected from different publications of the National Bureau of Statistics (NBS), Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank handbook of Statistics.

Model Specification

The study involved an assessment of the determinants of industrial sector growth or performance in the economy and the relationship between growth of the sector and these determinants over the period of study. The theoretical framework for this study is the Solow Growth Model as highlighted in the earlier sections of this work. Reference to the models presented in the following studies; Otalú and Anderu (2015), and Enu *et al* (2013) also guided this study. Otalú and Anderu (2015) assessing the factors Nigeria identified major factors of industrial growth as capital, labour, exchange rate, education, inflation rate, capacity utilization, trade openness and electricity generation. This present study focused on three variables i.e the GDP growth, the exchange rate and the inflation rate.

The estimating model for this study is therefore stated as follows:

INSEG =

The modified multiple regression version of this model for is presented below:

$$\ln Y_i = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \beta_6 \ln X_6 + \varepsilon \dots\dots\dots 2$$

$$Y_i = \text{industrial sector growth rate}$$

$$\beta_0 \text{ is the constant term } \beta_1, \beta_2, \beta_3, \dots \text{ are constants of the regression equation to be determined}$$

- X_1 = GDP growth rate
- X_2 = Exchange growth rate
- X_3 = Inflation growth rate
- ε = Error term
- \ln = Natural logarithm.

The regression function shown above in log form shows growth rate was used to access factors that determine growth in the industrial sector. The dependent variable is the industrial sector's growth as a function of the other independent variables. Ordinary least squares (OLS) method was engaged to estimate the unknown parameters in the multiple regression model, the Augmented Dickey Fuller (ADF) unit root test and the co-integration test were used to check for stationarity and co-integration properties of the variables. E-views and SPSS software packages were used from where correlations, means, standard deviations, variances, standard errors, t-statistic, f-statistic and other statistics were generated to ascertain the link between the variables.

Data Analysis Table 1: showing the Descriptive Statistics of the variable used

	GDP	EXR	INF	IND
Mean	34530.01	88.82697	19.65548	9835.316
Std. Dev.	18086.73	70.29011	17.49871	2282.403
Observations	30	30	30	30

Source: Author's Estimation Result (2018) using SPSS

The descriptive statistics of the variables of interest as presented in the above Table 3 showed that the GDP had the highest mean value and also the highest standard deviation while interest rate (INT) had the lowest mean and standard deviation.

Table 2: Showing the Correlation Matrix of variables

	GDP	EXR	INF	IND
GDP	1.000000			
EXR	0.898822	1.000000		
INF	-0.376485	-0.433976	1.000000	
IND	0.940319	0.891055	-0.396223	1.000000

Source: Author's Estimation Result (2018) using SPSS

The above Table 2 showed the correlation matrix of the independent variables and the dependent variable. It is a measure of the strength of the association between the two sets of variables. The GDP, Exchange rate (EXR), showed a positive strong association of 0.94, and 0.89, respectively with the industrial sector which meant that as the individual independent variable grew, the industrial sector grew accordingly. However, inflation rate had a weak negative association of -0.39 with the dependent variable indicating that variables moved in nearly opposite directions.

Unit Root Test

Table 3: Results of the Augmented Dickey Fuller (ADF)

Method ADF	IND	GDP	EXR	INF
at 5% Level	-1.59 (-2.96)	-0.55 (-2.97)	-2.49 (-2.96)	-2.98* (-2.96)
Prob. Value	0.474	0.867	0.127	0.049

Source: Author's Estimation Result (2018) using E-view

Remarks: *= represented 5% level of significance, ADF= Augmented Dickey Fuller

Table 4: Results of the Augmented Dickey Fuller (ADF)

Method ADF	IND	GDP	EXR	INF
at 1st difference	-4.69* (-2.97)	-2.92 (-2.97)	-5.47* (-2.97)	-4.79* (-2.97)
Prob. Value	0.0008	0.054	0.0001	0.0006

Source: Author's Estimation Result (2018)
 Remarks*= represented 5% level of significance, ADF= Augmented Dickey Fuller

Table 5: Results of the Augmented Dickey Fuller (ADF)

Method ADF	IND	GDP	EXR	INF
at 2nd difference	-5.85* (-1.95)	-7.22* (-1.95)	-9.15* (-1.95)	-7.44* (-1.95)
Prob. Value	0.0000	0.0000	0.0000	0.0000

Source: Author's Estimation Result (2018)

Remarks *= represented 5% level of significance, ADF=Augmented Dickey Fuller

Tables 3, 4 and 5, above showed the results of ADF to test the null hypothesis for the presence of unit root at levels, 1st and 2nd differences, respectively. In Table 3, only INF was found to be stationary at levels at 5% and also exceeded the critical values. In Table 4, all variables were stationary except the GDP at 1st difference. Further analysis were carried out as shown in Table 5, and all variables were found to be stationary at 2nd difference and values were all negative and greater than the critical value of -1.95. It was therefore concluded that the time series data collected for the analysis of the determinants of industrial growth in the Nigerian economy were all found to be stationary at second difference and the values were significant at 5% which indicated that the variables did not contain unit root. Study therefore rejected the null hypotheses.

Table 7: Results of the Ordinary Least Squares (OLS) for Nigeria. Industrial Growth (IND) as the dependent variable

Independent variables	Coefficients	Standard Error	T-Stat	Prob.
C	4.9407	0.4877	10.1298	0.000
GDP	0.3576	0.0470	7.6043	0.000
EXR	-0.0197	0.0234	-0.8411	0.408
INF	0.0034	0.0133	-0.2568	0.799
R-Squared = 0.97		F-Stat = 127.20		
R-Bar-Squared = 0.96		DW-Stat = 1.78		

Source: Author's Estimation Result (2018)

Remarks: 5% level of significance

From Table 7 above, the OLS results showed or gave a low level of Durbin Watson statistics of 1.78 which is less than the prescribed value of 2.00 which suggested the presence of autocorrelation. To remove this autocorrelation a further analysis was done and is as presented in the Table 10 below:

Table 8: Further Analysis using Cochrane-Orcutt Method AR(2) for Nigeria. Industrial Growth (IND) as the dependent variable

Independent variables	Coefficients	Standard Error	T-Stat	Prob.
C	4.5161	0.3695	12.2241	0.000
GDP	0.3818	0.0338	11.2929	0.000
EXR	-0.0099	0.0201	-0.4934	0.626
INF	0.0124	0.0120	1.0293	0.313
R-Squared = 0.97		F-Stat = 74.17 (0.000)		
R-Bar-Squared = 0.96		DW-Stat = 2.02		

Source: Author's Estimation Result (2018)

Remarks: 5% level of significance

A further analysis using Cochrane - Orcutt Method AR(2) yielded better results as shown in table 8 above, where the DW value was 2.02 which indicated that there was no evidence of serial correlation. The coefficient of determination (R^2) with a value of 0.97 showed that about 97% of the systematic variations or changes in the dependent variable that is industrial output (IND) was explained by the various independent variables used in the model. The 0.96 of R-bar-squared showed that 96% of the variations or changes in industrial output could still be explained by the determinants after adjusting for the degree of freedom, while only 4% of the changes in the output could not be explained by the model which has been captured by the error term in the model. Study's results as presented in table 8 showed that the Prob. (F-statistic) = (0.000), is less than 0.05. Thus, Factors (GDP, Exchange rate, Inflation rate) were determinants of the industrial sector's growth in Nigeria.

All hypotheses were tested at the 5% level of significance and the decision rule is that for the individual determinants, study shall accept the null hypothesis if Prob. (T-statistic) is greater than 0.05 otherwise accept alternative hypothesis if Prob. (T-statistic) is less than 0.05.

For hypothesis one that there is no significant relationship between the GDP and growth in the Industrial sector; the study concluded from Table 8 that a significant relationship existed between the Nigerian economy proxied by GDP and growth in this sector. Since the Prob. (T-statistic) = (0.000), is

less than 0.05, hence the study rejected the null hypothesis and accepted the alternative hypothesis that there is a significant relationship between the GDP and growth in the Industrial sector.

For hypothesis two that there is no significant relationship between exchange rate and growth in the Industrial sector; the study concluded from results in table 8 that a significant relationship existed between exchange rate and industrial sector's growth since the Prob. (T-statistic) = (0.626), was greater than 0.05, hence study accepted the null hypothesis that there is significant relationship between exchange rate and growth in the Industrial sector;

In Hypothesis three which stated that there is no significant relationship between inflation rate and growth in the Industrial sector; the study concluded from results in table 8 that a no significant relationship existed between inflation rate and growth in the Industrial sector. Since the Prob. (T-statistic) = (0.313), was greater than 0.05, hence study hereby accepted the null hypothesis.

Discussion of Findings

On the basis of an overall significance, F-calculated was greater than the F-tabulated ($F_{cal} > F_{tab}$ ie $74.17 > 2.69$), table 8 showed an F-Statistics of significance established at a calculated value of 74.17 and Prob. value of 0.000 which indicated that the model passed the 5% significance level. This showed that all the independent variables were statistically significant and a linear relationship existed between the dependent variable Industrial growth (IND) and all the independent variables GDP, EXR, and INF which were capable of explaining the growth of the industrial sector for the period under study.

On the basis of the individual significance, as shown by the T-statistics the Nigerian economy (GDP), had significant relationship with industrial growth (IND) at 99 percent levels each (0.000, 0.001) respectively. But exchange rate (EXR) and inflation rate (INF) showed no

significant relationship with the dependent variable at 0.626 and 0.313 respectively. This result is in tandem with Anyanwu and Kalu (2015) of a positive strong relationship between the industrial sector and the GDP. Inflation rate is positive contrary to the apriori expectation of a negative sign. Though it shows a positive sign, and a p-value of 0.313 which is greater than 0.05, a change poses no significant impact on the growth of the industrial sector just about 0.012 (1%) in the long run. Exchange rate is negative which means that it exhibits negative impact on growth in the industrial sector. The impact of a change in exchange rate has no significant effect on the growth of the sector because it would lead to -0.009 (1percent) contraction or a decrease in the growth of the sector. The result is in tandem with Sola *et al.* (2013) of a negative relationship but did not support the work of Olatu and Anderu (2015), which purported that the relationship between exchange rate and industrial output was significantly positive.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This section focuses on the summary of the findings from the data analysis and the conclusions therefrom. This study also proffers appropriate recommendations for policy formulation.

In summary the findings resulting from this study are as follows:

- (i) Of the three determinants of industrial sector growth, GDP had positive and significant impact on industrial sector growth in the Nigerian Economy while exchange rate and inflation rate had no significant impact on industrial sector growth.
- (ii) The determinant exchange rate (EXR) had negative and no-significant impact on industrial sector growth of the Nigerian Economy, inflation rate (INF) had a positive and non-significant impact on industrial sector growth.
- (iii) From the robustness test carried out in this study, the regression analysis test ran on the determinants of industrial sector for the period

starting from 1986 – 2016 showed that the determinants contributed about 97percent of the total change in growth rate of the sector in the Nigerian economy. Also the F-Statistic value (74.17) with Prob. value (0.000) indicated there was significant relationship between the industrial sector growth and the determinants. The estimated model therefore revealed that an increase in the GDP, would increase the growth in the sector by 38%. The study shows that a positive relationship exists between the industrial sector's growth and the determinants (GDP, INF) while there was a negative relationship between it and EXR.

CONCLUSION

This study assessed the major macroeconomics determinants of the industrial sector's growth in the Nigerian economy. The ordinary least square (OLS) multiple regression model was used to determine the relationship among these determinants and the growth of this sector for a period of thirty (30) years. The results of the OLS showed an overall significant relationship between the industrial sector's growth and the determinants during the period under study. The model was also able to ascertain the type of relationship between the individual determinant and the growth of the industrial sector. Of the determinants GDP had a positive and significant relationship with the sector while on the other hand exchange rate and inflation rate had no significant relationship with the sector. While exchange rate had a negative and non-significant relationship, inflation rate had a positive and non-significant relationship with the industrial sector in the Nigerian economy.

Recommendations for Policy Implementation

Based on the result and conclusions from this study, the study shall make the following recommendations:

1. The positive result of the Nigerian economy implied that the GDP in Nigeria was one factor which had affected the development of the

industrial sector in the Nigerian economy. Growth of the GDP implied macroeconomic stability and this was an important determinant of the industrial sector's growth in Nigeria. This trend would attract foreign investors when there is assurance of getting value for their money as a result of large market for their products. To this end, government should ensure a stable and enabling environment for industrial and production activities in the country.

2. The exchange rate in the country has experienced a continuous rise over the years, though this should attract foreign investments in industries, it did not favour local industries to grow in the country. The result of the study showed a negative and non-significant impact of the exchange rate on industrial growth which implied that an unstable and volatile currency had the potential of discouraging industrialization in Nigeria. The Nigeria government and the central bank of Nigeria must maintain a strong policy on exchange rate that would enable investors and manufacturers to invest and produce rather than importing finished goods. This would bring stability and appreciation of the naira over a period of time.

3. Study results revealed that inflation rate had a positive and a non-significant impact on the growth of the industrial sector in Nigeria over the period examined. Though it did not support the *a priori* expectation of a negative relationship, it was not sufficient to explain the growth of the industrial sector over the period under study. But the government should ensure a monetary and fiscal policy that could curtail the continuous and general rise in the price levels of commodities in the economy.

REFERENCES

- Adebiyi, M., (2004). Trade liberalization policy and industrial growth. *Nigerian Economic Society Publication*.
- Agbonifoh, B., & Yomere, G. (1999). *Research methodology in the management and social sciences*. Benin, Nigeria: *Uniben Press*.

- Aghion, P., George-Marios A., Abhijit B., and Kalina M. (2010). Volatility and growth: Credit constraints and the composition of investment. *Journal of Monetary Economics*. 3 246-265.
- Ajmair, M and Hussain, K. (2017). Determinants of industrial sector growth in Pakistan. *Journal of Poverty, Investment and Development*. 34.
- Ajide, K. (2014). Determinants of Economic Growth in Nigeria. *CBN Journal of Applied Statistics*. 5 (2).
- Aroriode, O. and Ogunbadejo, H. (2014). Impact of macroeconomic policy on agricultural growth in Nigeria. *IOSR Journal of Agriculture and Veterinary Science* 7(11) 01-05.
- Anyanwu U.N.; Kalu A. O.U. (2015) *The Impact of Statutory Money Supply Management and Commercial Bank Loans and Advances) on Economic Growth: An Empirical Evidence in Nigeria*. Arabian Journal of Business and Management Review (Nigerian Chapter) Vol. 1
- Bachmann, R. & Mescarini, G. (2011). Business Cycles and Endogenous Uncertainty. No. 36, Society for Economics Dynamic
- Bloom, N. (2014). Fluctuations in uncertainty. *Journal of Economic Perspectives* 153-175
- CIA. (2013). The World Fact Book. Retrieved November, 13, from <https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html>.
- Enu, P., Hagan, E., and Attah-Obeng, P. (2013). Impact of macroeconomic factors on industrial production in Ghana. *European Scientific Journal* edition 9(28). 1857 – 7881
- Essien, E. and Bawa, E. (2007). Explaining growth: A cross- country analysis of West African monetary zone. *CBN Economic and Financial Review* 40(3).
- Fischer, S., (1993). The role of macroeconomic factors in growth. *Journal of Monetary Economics* 32. 485-512.
- Khondoker, M.A.(2007). Determinants of Foreign Direct Investment and its impact on economic growth in Developing Countries. MPRA Paper 9453 University Library of Munich, Germany.
- Lankauskienė, T. & Tvaronavičienė, M. (2015). Economic Structure and Economic Growth Evaluation, Doctoral Dissertation in Social Sciences, Economics. Vilnius Gediminas Technical University. Lithuania
- National Bureau of Statistics (2016). Nigerian Gross Domestic Product Report
- Obioma, B., Anyanwu, U., & Kalu, A. (2015). The effect of industrial development on economic growth: (An Empirical Evidence In Nigeria 1973-2013). *European Journal of Business and Social Sciences*. 4(2). 127 – 140
- OECD. (2008). The contribution of services to development and the role of trade liberalization and regulation. *Global Forum for Investment*.
- Ogun, T., and Alege, P. (2004). Exploring Globalization and Industrialization Nexus for Economic Development: A Case of Nigeria. A paper presented at the Annual Conference of the Nigerian Economic Society held at Covenant University Ota, 2004.
- Oluchukwu, N. B. (2013): Foreign Direct Investment Determinants in Pre and Deregulated Nigerian Economy. A Ph.D thesis presented to the Department of Banking and Finance, Faculty of Business Administration, University of Nigeria Nsukka.
- Olusanya, S. O. (2013). Impact of foreign direct investment on economic growth in a Pre and Post Deregulated Nigeria Economy. *European Scientific Journal* 9(25). 1857 – 7881
- Opaluwa, D., Umeh, J., and Ameh, A. (2010). The effect of exchange rate fluctuations on the

- Nigerian manufacturing sector. *African Journal of Business Management*. 4(14). 2994-2998
- Otalú, J., & Anderu, K. (2015). An assessment of the determinants of industrial sector growth in Nigeria. *Journal of Research in Business and Management* 3(7). 01-09
- Peneder, M. (2009). Sectoral growth drivers and competitiveness in the European Union. *European Commission, Enterprise and Industry, European Communities*. 1-542.
- Ravindran, R. and Soroush, K. (2015). *Journal of Economics, Business and Management*. 3 (2). 275
- Sangyup C., Davide F., Yi, H., and Prakash L. (2017). Aggregate uncertainty and sectoral productivity growth: The role of credit constraints. *Graduate Institute of International and Development Studies, Geneva*.
- Shaari, M. S., Hussain, N. E., & Abdul Rahim, H. (2013). The effects of oil price changes and exchange rate volatility on unemployment: Evidence from Malaysia. *International Journal of Research in Business and Social Science*, 2(4). 72–83.
- Singh, M. and Kuar, K. (2014). India's services sector and its determinants: An empirical investigation. *Journal of Economics and Development Studies*. 2 (2). 385-406.
- Sola O., Obamuyi, T. M., Adekunjo, F. O., and Ogunleye., E. O. (2013). Manufacturing performance in Nigeria: Implication for sustainable development. *Asian Economic and Financial Review*, 3(9), 1195-1213.
- The Central Bank of Nigeria (2016). *Summary Report: 1981-2016*
- Uwakaeme, S. O. (2015). Economic growth in Nigeria: An empirical investigation of determinants and causal relationship. *American Journal of Economics* 5(1): 9-20
- Uwem, E. & Uket, E. (2005). Industrialization and import addiction in Nigeria. *Nigerian Economic Society publication*.